

CLAIMS

1. An antenna device comprising an antenna unit, the antenna unit comprising an antenna core member having a soft magnetic member and a conductor member attached to the antenna core member,

characterized in that a conductive layer disposed on at least part of the antenna core member and the conductive layer serves as a sensor electrode.

2. The antenna device according to Claim 1, characterized in that the sensor electrode is a capacitance-operated sensor electrode.

3. The antenna device according to Claim 1 or Claim 2, characterized in that the antenna core member comprises a soft magnetic member having conductivity, and at least part of the soft magnetic member is the conductive layer.

4. The antenna device according to Claim 3, characterized in that the soft magnetic member is formed by laminating a plurality of core sheets.

5. The antenna device according to Claim 3 or Claim 4, characterized in that material which forms the soft magnetic member is amorphous soft magnetic material or soft magnetic

nanocrystalline material.

6. The antenna device according to Claim 1 or Claim 2, characterized in that the antenna core member is formed of ferrite as a base material and the conductive layer is disposed on at least part of a surface of the antenna core member.

7. The antenna device according to Claim 6, characterized in that the conductive layer is a film or a foil having conductivity.

8. The antenna device according to any one of Claim 1 to Claim 7, comprising an opposing member provided so as to oppose the conductive layer to define an entry space to which an object can enter between the opposing member and the conductive layer.

9. The antenna device according to Claim 8, characterized in that the opposing member is a body of a vehicle body or an architectural structure.

10. The antenna device according to any one of Claim 1 to Claim 9, comprising a controller for transmitting or receiving electrical signals with respect to the conductor

member of the antenna unit, and

the controller is set to temporally shift an antenna unit operating time during which the electrical signals with respect to the conductor member are transmitted and received and a sensor operating time during which power is supplied to the sensor electrode at least partly.

11. A door handgrip apparatus comprising: an antenna device including an antenna core member and a conductor member attached to the antenna core member; and

a handgrip for holding the antenna device,

characterized in that a conductive layer is disposed on at least part of the antenna core member of the antenna device, and the conductive layer serves as a sensor electrode.

12. The door handgrip apparatus according to Claim 11, characterized in that the antenna core member comprises a conductive soft magnetic member and at least part of the soft magnetic member is the conductive layer.

13. The door handgrip apparatus according to Claim 11, characterized in that the antenna core member is formed of ferrite as a basic material and the conductive layer is disposed on at least part of a surface of the antenna core

member.